Date: Thursday, 26/06/2008 12:51:11 PM
User: Jean-Luc Menard

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services
Job Number : 39924
Estimate Number : 10281
P.O. Number :
This Issue : 26/06/2008 **S.O. No.** :
Prsht Rev. : NC
First Issue : 26/06/2008 **Type** : MACHINED PARTS
Previous Run : 39862
Written By : 08.06.26.
Checked & Approved By :
Comment : Est Rev:Pick:A 04.02.18 New issue KJ/DS
Est Rev:B Changed Mat Size 08-06-26 JLM

Drawing Name : BRACKET ASSEMBLY
Part Number : D3183043
Drawing Number : D3183 REV C1
Project Number : N/A
Drawing Revision : C1
Material :
Due Date : 03/07/2008 **Qty:** 10 **Um:** Each
Verified By:EC

Additional Product

Job Number:

Seq. #:	Machine Or Operation:	Description :
1.0	M174B1500X02250	17-4 SS Bar 1.5"X2.250"

Comment: Qty.: 0.4812 f(s)/Unit Total : 4.8122 f(s)
Material: 17-4 SS Bar per AMS 5604/5643
(M17-4-B1.500x02.25)
Identify for D3183-043
Batch: M108309 08/07/08 (10)

2.0	BAND SAW	BAND SAW

Comment: BAND SAW
Cut blanks: (1.500" x 2.000") 5.500" long 08/07/08

3.0	HAAS1	HAAS CNC VERTICAL MACHINING #1

Comment: HAAS CNC VERTICAL MACHINING #1

1-Machine D3183-3 as per Folio FA322 and Dwg D3183
Identify as D3183-3

2-Deburr

3-Scribe batch number 08/08/20 (6x) [redacted] 08/07/11 08/07/08

4.0	QC2	INSPECT PARTS AS THEY COME OFF MACHINE

Comment: INSPECT PARTS AS THEY COME OFF MACHINE 08/07/08

Form: rprocess

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: D3183-043 D412-698-011/031 **PAR #:** _____ **Fault Category:** Machining **NCR:** (Yes) No **DQA:** [illegible] **Date:** 08.08.24

QA: N/C Closed: [illegible] **Date:** 08/08/26

NCR: 39924		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			
8/7/10	30	From Second check of parts from machine operator he noticed that (6) parts had Dim. 0.162" ranging from 0.150" to 0.148".	08-07-17 PL QS 10-12	hold all 6 parts in till notfaction From David Shephard. PARTS ACCEPTABLE. REF DS EMAIL Last page	08/07/17	08/07/17	08.07.17 PL QS 10-12	08/07/10
		R.C. operator on other shift had the tool heights Differating from what was on the mill.						

NOTE: Date & initial all entries

Date: Thursday, 26/06/2008 12:51:11 PM
User: Jean-Luc Menard

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services **Drawing Name:** BRACKET ASSEMBLY

Job Number: 39924 **Part Number:** D3183043

Job Number:

Seq. #:	Machine Or Operation:	Description :
5.0	QC8	SECOND CHECK

Comment: SECOND CHECK J.L 08/07/18

6.0	D312121	Bolt

Comment: Qty.: 2.0000 Each(s)/Unit Total : 20.0000 Each(s)
Pick:
Qty Part Number Description Batch
2 D3121-21 Bolt B 39947 (6X) B46284 (4X) 08/08/20

7.0	D3183045	Bearing Assembly

Comment: Qty.: 2.0000 Each(s)/Unit Total : 20.0000 Each(s)
Pick:
Qty Part Number Description Batch
2 D3183-045 Bearing Ass B40496 (6X) B40159 (4X) 08/08/20

8.0	SMALL FAB 1	SMALL & MEDIUM FAB RESOURCE 1

Comment: SMALL & MEDIUM FAB RESOURCE 1
Assemble D3183-043 as per Dwg D3183. 08/08/20 (10)

9.0	QC5	INSPECT WORK TO CURRENT STEP

Comment: INSPECT WORK TO CURRENT STEP 08/08/20 (A6)

10.0	PACKAGING 1	PACKAGING RESOURCE #1

(6X)

Comment: PACKAGING RESOURCE #1
Identify and Stock
Location: 233A 8/8/20

11.0	QC21	FINAL INSPECTION/W/O RELEASE

Comment: FINAL INSPECTION/W/O RELEASE 08/08/20

Job Completion MF 08-08-20

Form: rprocess

DART AEROSPACE LTD	Work Order:	39924
Description: Bracket	Part Number:	D3183-A 3
Inspection Dwg: D3183 Rev: C1		Page 1 of 1

08.07.11

FIRST ARTICLE INSPECTION CHECKLIST

[X] First Article [ ] Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
R0.190	+/-0.030	.190	✓			
R0.063	+/-0.010	.063	✓			
~~0.188~~ N/A	+/-0.010		✓			
0.070	+/-0.010	.073	✓			
0.100	+/-0.010	.102	✓			
Ø0.201 x 0.100	+/-0.010	.203 x .097	✓			
~~0.183~~ 0.182	+/-0.010	.182	✓			
5.32	+/-0.030	5.308	✓			
5.036	+/-0.010	5.032	✓			
2.120	+/-0.010	2.122	✓			
1.290	+/-0.010	1.292	✓			
0.365	+/-0.010	.366	✓			
0.218	+/-0.010	.212	✓			
1.030	+/-0.010	1.029	✓			
1.90	+/-0.030	~~1.886~~ 1.890	✓			
1.012	+/-0.010	1.006	✓			
Ø0.201 x 0.100	+/-0.010	.203 x .097	✓			
0.786	+/-0.010	.778	✓			
Ø0.392	+0.002/-0.000	.392	✓			
R0.19	+/-0.030	.187	✓			
3.954	+/-0.010	3.956	✓			
0.162	+/-0.010	.160	✓			
R0.19	+/-0.030	.187	✓			
R0.25	+/-0.030	.250	✓			
4.26	+/-0.030	4.266	✓			
2.800 Calculated dimension	+/-0.030	2.800	✓			
0.162	+/-0.010	.160	✓			
0.615	+/-0.010	.615	✓			
0.435	+/-0.010	.435	✓			
0.200	+/-0.010	.203	✓			
0.381	+/-0.010	.382	✓			
0.032	+/-0.010	.030	✓			

Measured by:	SF
Date:	08/07/08

Audited by:	JL
Date:	08/07/18

Prototype Approval:	N/A
Date:	N/A

Rev	Date	Change	Revised by	Approved
A	03.11.12	New Issue P/O D3183-044	KJ/RF	
B	04.03.15	Changes as per revision C	KJ/JLM/RF	
C	04.06.15	Dimension 2.800 was 2.080; removed 1.155, 0.36 dimensions	KJ/JLM	
D	06.03.09	Dwg Rev update	KJ/JLM	
E	08.01.16	Dimensions revised	KJ/EC/DD	

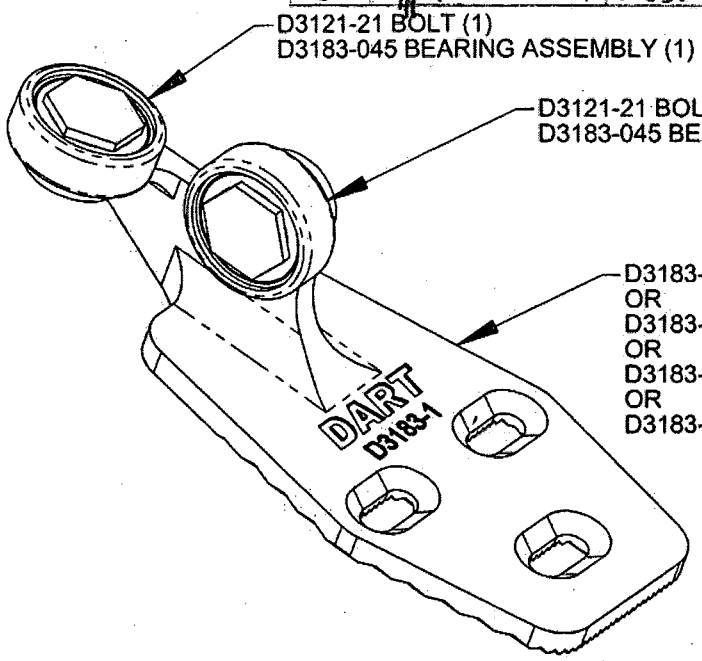
DESIGN	DRAWN BY	**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D3183	REV. C SHEET 1 OF 4
DATE 04.02.17		TITLE BRACKET ASSEMBLY	SCALE 1:1

DART

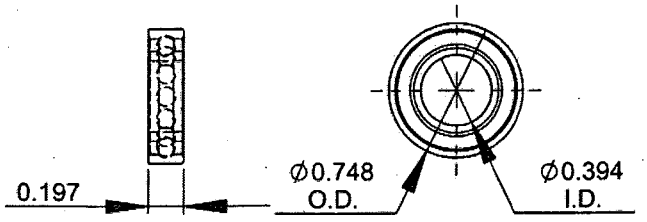
COPY ISSUED

RELEASED 04.03.01

A.	03.01.24	NEW ISSUE
B	03.06.17	REMOVE BEARING; 1.012 WS 0.882
C	04.02.17	ADD -045/-9; 0.182 WAS 0.431
C1	04.11.09	0.830 WAS 0.850



D3183-041 BRACKET ASSEMBLY (SHOWN)
D3183-042 BRACKET ASSEMBLY (OPPOSITE)
D3183-043 BRACKET ASSEMBLY (SIMILAR)
D3183-044 BRACKET ASSEMBLY (SIMILAR)



D3183-5 BEARING: SPECIFICATION CONTROL DRAWING

1) SINGLE ROW, DEEP GROOVE, CONRAD TYPE, SHIELDED
2) POSSIBLE SUPPLIER: NSK P/N 680022
3) ALL DIMENSIONS ARE IN INCHES

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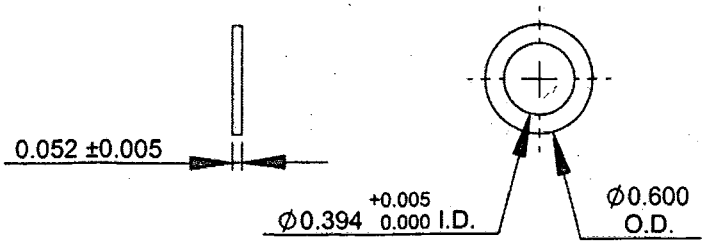
WORK ORDER NO. 39924



D3183-7 WASHER

1) MATERIAL: AISI 303 ROUND BAR (M303R) ANNEALED
2) BREAK ALL SHARP EDGES 0.005 TO 0.010
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
4) ALL DIMENSIONS ARE IN INCHES

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
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DATE 04.02.17		TITLE BRACKET ASSEMBLY	SCALE 1:2

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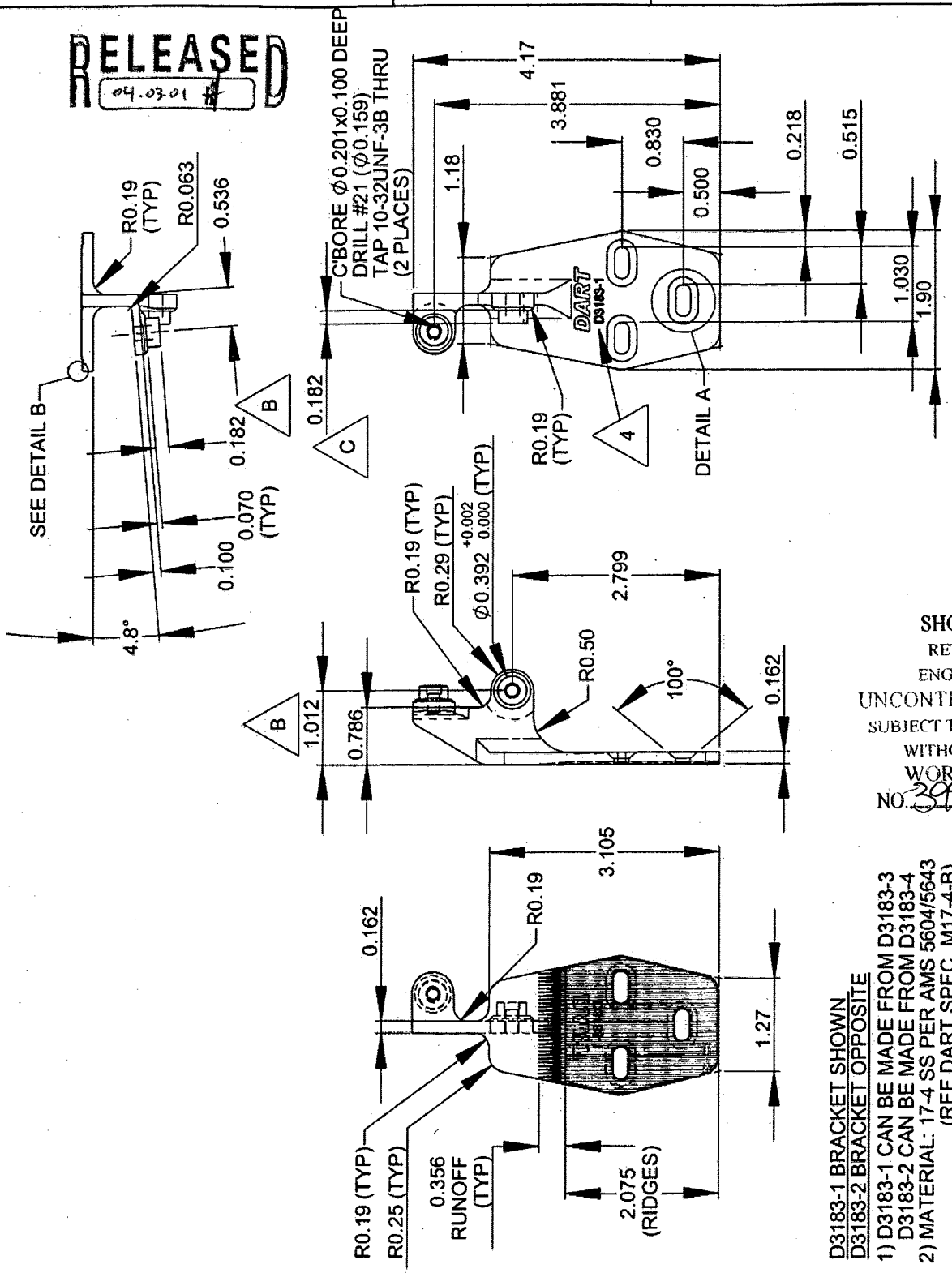

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D3183-1 BRACKET SHOWN
D3183-2 BRACKET OPPOSITE

1) D3183-1 CAN BE MADE FROM D3183-3
D3183-2 CAN BE MADE FROM D3183-4
2) MATERIAL: 17-4 SS PER AMS 5604/5643
(REF DART SPEC. M17-4-B)
MIN ULTIMATE STRENGTH = 150 ksi
MIN YIELD STRENGTH = 100 ksi
3) BREAK ALL SHARP EDGES 0.005 TO 0.015
4) ENGRAVE DART P/N & LOGO AS SHOWN
5) TOLERANCES ARE PER DART QSI 018 UNLESS
OTHERWISE NOTED
6) ALL DIMENSIONS ARE IN INCHES

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
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DATE 04.02.17		TITLE BRACKET ASSEMBLY	SCALE 1:2

DART

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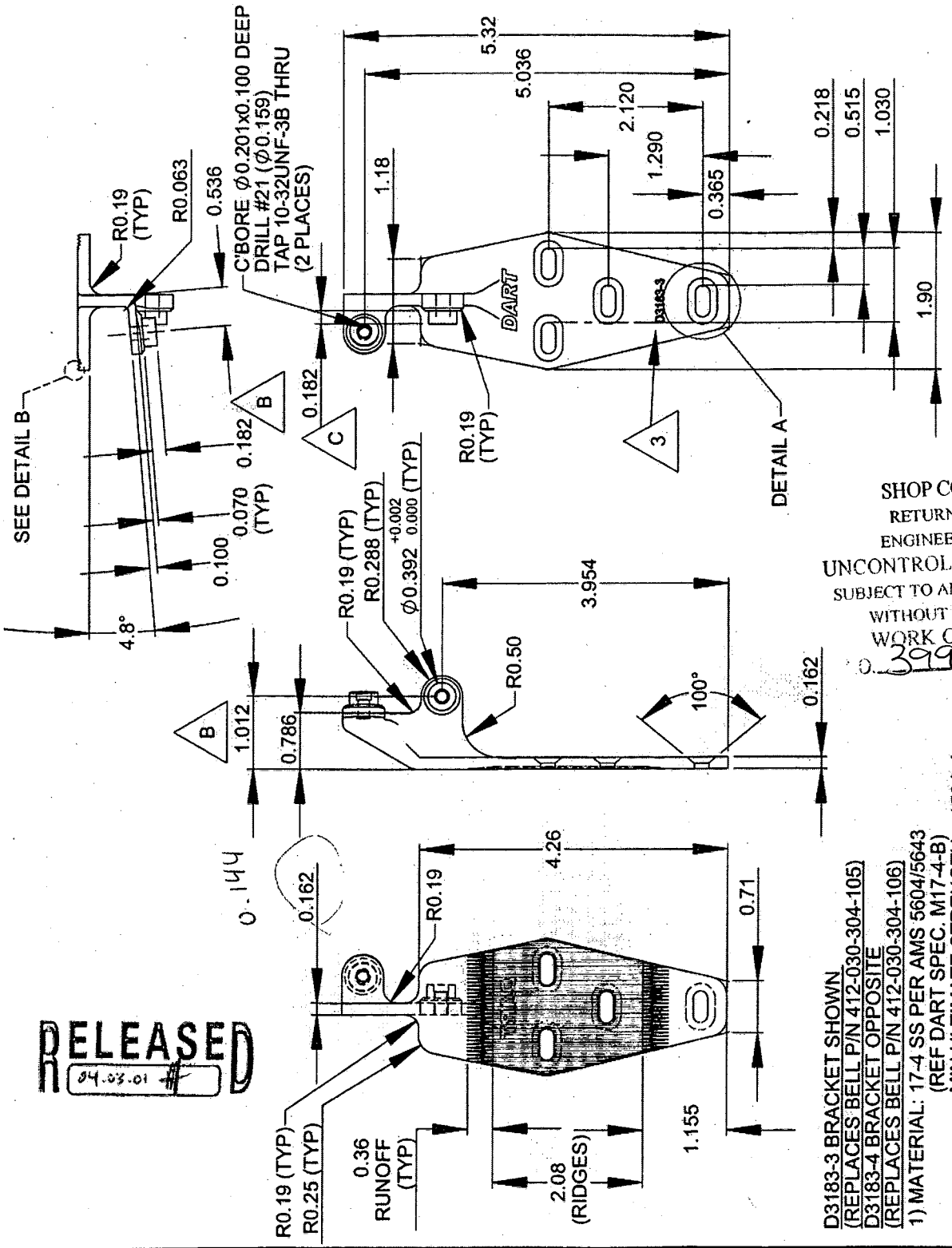

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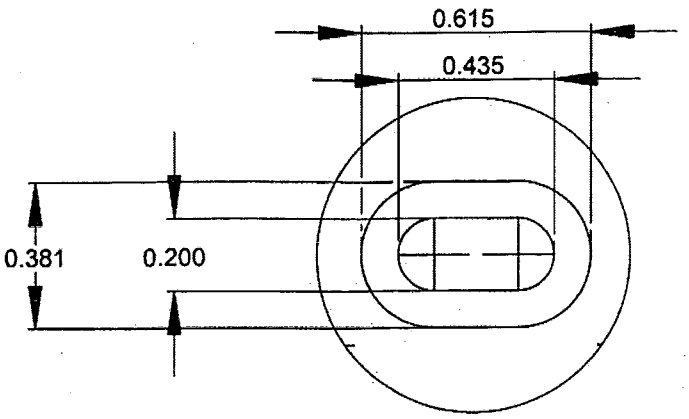
D3183-3 BRACKET SHOWN
(REPLACES BELL P/N 412-030-304-105)
D3183-4 BRACKET OPPOSITE
(REPLACES BELL P/N 412-030-304-106)

1) MATERIAL: 17-4 SS PER AMS 5604/5643
(REF DART SPEC. M17-4-B)
MIN ULTIMATE STRENGTH = 150 ksi
MIN YIELD STRENGTH = 100 ksi
2) BREAK ALL SHARP EDGES 0.005 TO 0.015
3) ENGRAVE DART P/N & LOGO AS SHOWN
4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
5) ALL DIMENSIONS ARE IN INCHES

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D3183	REV. C SHEET 4 OF 4
DATE 04.02.17		TITLE BRACKET ASSEMBLY	SCALE 1:1



DETAIL A (2 : 1)

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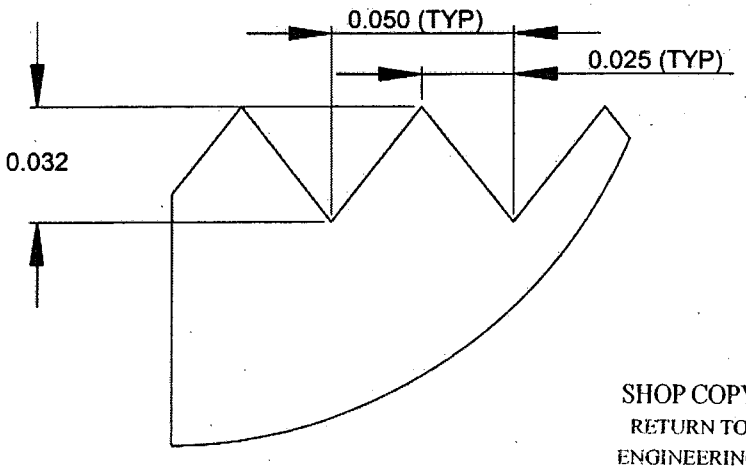

DETAIL B (20 : 1)

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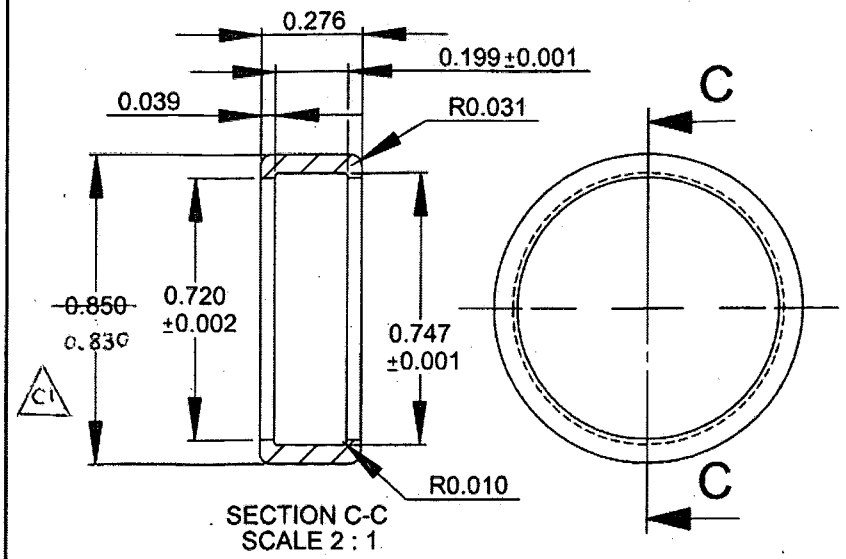

SECTION C-C
SCALE 2 : 1

D3183-9 CAP

1) MATERIAL: DELRIN ROD, Ø1.00
(REF DART SPEC. M-DELRIN-R1.00)
2) TOLERANCES ARE PER DART QSI 018
UNLESS OTHERWISE NOTED
3) ALL DIMENSIONS ARE IN INCHES

D3183-045 BEARING ASSEMBLY

1) ASSEMBLE D3183-5 BEARING AND
D3183-9 CAP

Chris Provencal

From: David Shepherd [dshepherd@dartaero.com]
Sent: July 17, 2008 11:29 AM
To: 'Chris Provencal'
Subject: RE: Emailing: NCR_D3183-3.jpg

Chris,

I believe this is an acceptable deviation.
The critical thing is that the base thickness (ie. the face that mates with sliding door) is within spec.

David

-----Original Message-----
From: Chris Provencal [mailto:cprovencal@dartaero.com]
To: 'David Shepherd'
Subject: Emailing: NCR_D3183-3.jpg

David,

Qty(5) D3183-3 Brackets, the 0.162 thickness of the roller flange is up to 0.142 min on some parts. The thickness isn't uniform, there are several operations that make this flange, at least one of them must have had a wrong offset. I'm assuming that these rollers are critical to holding the door on in flight and I have no SR to justify the thickness reduction, so I would scrap them.

What is your opinion?

-Chris